

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-7 (canceled).

Claim 8 (previously presented) A superconducting circuit comprising:
a single flux quantum circuit using a high temperature superconductor; and
an interface circuit for said single flux quantum circuit,
wherein said single flux quantum circuit is provided with a first Josephson junction, and said
interface circuit is provided with a second Josephson junction made from a combination of materials
different from those of said first Josephson junction,
wherein hysteresis in the current-voltage characteristic of said first Josephson junction is
smaller than hysteresis in the current-voltage characteristic of said second Josephson junction,
wherein said first Josephson junction comprises:
a lower electrode made from La-doped YBaCuO;
an upper electrode made from YbBaCuO; and
a damage layer formed between the lower electrode and the upper electrode, serving as a
barrier, and
wherein said second Josephson junction comprises:

a lower electrode made from La-doped YBaCuO;
an upper electrode made from La-doped YbBaCuO; and
a layer made from LaSrAlTaO in addition to a damage layer formed between the lower electrode and the upper electrode, serving as a barrier.

Claim 9 (previously presented) A superconducting circuit comprising:
a single flux quantum circuit using a high temperature superconductor; and
an interface circuit for said single flux quantum circuit,
wherein said single flux quantum circuit is provided with a first Josephson junction, and said interface circuit is provided with a second Josephson junction made from a combination of materials different from those of said first Josephson junction,
wherein hysteresis in the current-voltage characteristic of said first Josephson junction is smaller than hysteresis in the current-voltage characteristic of said second Josephson junction,
wherein said interface circuit is formed of a latch driver circuit,
wherein said first Josephson junction comprises:
a lower electrode made from La-doped YBaCuO;
an upper electrode made from YbBaCuO; and
a damage layer formed between the lower electrode and the upper electrode, serving as a barrier, and
wherein said second Josephson junction comprises:

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a lower electrode made from La-doped YBaCuO;
an upper electrode made from La-doped YbBaCuO; and
a layer made from LaSrAlTaO in addition to a damage layer formed between the lower electrode and the upper electrode, serving as a barrier.

Claim 10 (previously presented) A superconducting circuit comprising:

a single flux quantum circuit using a high temperature superconductor; and

an interface circuit for said single flux quantum circuit,

wherein said single flux quantum circuit is provided with a first Josephson junction, and said interface circuit is provided with a second Josephson junction made from a combination of materials different from those of said first Josephson junction,

wherein hysteresis in the current-voltage characteristic of said first Josephson junction is smaller than hysteresis in the current-voltage characteristic of said second Josephson junction,

wherein a junction in which hysteresis in the current-voltage characteristic is 10% or less is used for said first Josephson junction and a junction in which hysteresis in the current-voltage characteristic is 10% or more is used for said second Josephson junction,

wherein said first Josephson junction comprises:

a lower electrode made from La-doped YBaCuO;

an upper electrode made from YbBaCuO; and

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a damage layer formed between the lower electrode and the upper electrode, serving as a barrier, and

wherein said second Josephson junction comprises:

a lower electrode made from La-doped YBaCuO;

an upper electrode made from La-doped YbBaCuO; and

a layer made from LaSrAlTaO in addition to a damage layer formed between the lower electrode and the upper electrode, serving as a barrier.

Claims 11-13 (canceled).

Claim 14 (currently amended) The superconducting circuit according to claim 8 [[1]], wherein said single flux quantum circuit is provided with a ground plane made from La-doped YBaCuO to restrain inductance in the single flux quantum circuit.

Claim 15 (currently amended) The superconducting circuit according to claim 9 [[2]], wherein said single flux quantum circuit is provided with a ground plane made from La-doped YBaCuO to restrain inductance in the single flux quantum circuit.

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Claim 16 (currently amended) The superconducting circuit according to claim 10 [[3]], wherein said single flux quantum circuit is provided with a ground plane made from La-doped YBaCuO to restrain inductance in the single flux quantum circuit.

Claim 17 (currently amended) The superconducting circuit according to claim 8 [[1]], wherein said single flux quantum circuit and said interface circuit are structured to be a multi-chip module.

Claim 18 (previously presented) The superconducting circuit according to claim 8, wherein said first Josephson junction and said second Josephson junction are each formed by a ramp edge junction

Claim 19 (previously presented) The superconducting circuit according to claim 9, wherein said first Josephson junction and said second Josephson junction are each formed by a ramp edge junction

Claim 20 (previously presented) The superconducting circuit according to claim 10, wherein said first Josephson junction and said second Josephson junction are each formed by a ramp edge junction.